

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 1491-143	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/CA 03/01514	International filing date (day/month/year) 01.10.2003	Priority date (day/month/year) 01.10.2002
International Patent Classification (IPC) or both national classification and IPC F23C11/04		
Applicant POWERTECH INDUSTRIES INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
 - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☒ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 27.04.2004	Date of completion of this report 22.03.2005
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Mougey, M Telephone No. +31 70 340-4298 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/CA 03/01514**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-20 as originally filed

Claims, Numbers

1-11 as originally filed

Drawings, Sheets

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
☒ the parts relating to claims Nos. 1-9 .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-9
	No: Claims	
Inventive step (IS)	Yes: Claims	9
	No: Claims	1-8
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations

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Re. Item IV

1. This Authority considers that there are 2 inventions covered by the claims indicated as follows:

I: Claims 1-9 directed to a pulse combustor with a plurality of tailpipe regions

~~II: Claims 10,11 directed to a burner with a hollow tube and a conic deflector~~

1 The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

1.1 The document US-A-6035810 (D1) is regarded as the closest prior art with regard to the subject-matter of independent claim 1 and discloses a pulse combustor comprising two spaced apart outer plates, said outer plates having flat outer regions, conical regions inside of the flat regions and central hubs, wherein the volume between said conical regions of said plates defines a combustion chamber (see column 4, lines 10-31). Moreover, a burner (102) is coupled to one of said hubs in order to ignite a fuel air mixture in said combustion chamber and the plates have spiral coolant passageways therein for conducting cooling fluid to cool expanding gases travelling between said plates through said tailpipe region.

1.2 The subject-matter of independent claim 1 differs from the disclosure of D1 in that a plurality of intermediate plates are provided in order to form a plurality of tailpipe regions. Such a provision can be considered as a contribution over the prior art and considered as the STF (Special Technical Features as defined by Rule 13(2) PCT) of the first invention. The STF is aimed at solving the problem of improving the modularity of the power output for the pulse combustor.

1.3 The subject-matter of independent claim 10 differs from the disclosure of D1, in that it discloses a burner provided with a an elongated hollow tube including a plurality of nozzle openings and a parabolic cone mounted at its end. Such a provision can be regarded as the STF of the second invention and is aimed at solving the problem of improving the homogeneity of the distribution of the combustion gases emanating from the burner.

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1.4 From the above, neither the two objective problems that can be formulated nor the different solutions defined by STF 1 and 2 allow for a relationship to be established among said subjects.

The application hence does not meet the requirement of unity of invention as defined by Rule 13(1) and (2) PCT.

Re Item V

2. INDEPENDENT CLAIM 1

2.1 As mentioned in paragraph 1.1 and 1.2 here above, the subject matter of claim 1 differs from the disclosure of D1 in that a plurality of intermediate plates are provided in order to form a plurality of tailpipe regions.

2.2 The problem to be solved by the present invention can be considered as improving the modularity of the power output for the pulse combustor.

2.3 However, such features have already been employed for the same purpose in a similar pulse combustor, see document WO-A-0012934 (D2), page 3, lines 18-31.
It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a pulse combustor according to document D1, thereby arriving at a pulse combustor according to claim 1.

2.4 The present application does therefore not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

3. DEPENDENT CLAIMS

3.1 The subject-matter of dependent claims 2-8 is already known from the prior art:

- for claims 2 and 3, see D2, page 5, lines 25-30 and figure 6,
- for claim 4, see D1, Figures 1, 2 and column 4, lines 10-14,
- for claim 5, see D1, figure 4 and column 4, lines 24-27,
- for claims 6 and 7, see EP-A2-950853, paragraphs 3,9,27,34 and figures 1,4,
- for claim 8, see D1, figure 1 and column 4, lines 10-14.

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3.2 The subject-matter of claim 9 is not disclosed nor rendered obvious by the available prior art.

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